Listing of Claims:

Claims 1-35 (canceled)

Claim 36 (currently amended): A frequency shifted laser radiation source for distance measurements,
comprising:

a frequency shifted feedback laser resonator having a pumped gain medium therein with a gain greater than unity so as to emit laser light having a plurality of frequency components changing with time in a chirping manner;

a means for splitting said emitted laser light having said plurality of frequency components changing with time in a chirping manner into an object beam for irradiating an object and a reference beam;

the emitted laser radiation being usable for determinations of distances of objects when using an object detection sensor which receives laser light radiation coming back from an object illuminated with the object beam light and being at a distance to be determined and which object detection sensor also receives said reference beam via a reference path not including the object in such a manner that the laser light radiation coming back from the object and the reference beam interfere with one another, said interference producing a signal by the beating of the plurality of frequency components that change with time in a chirping manner and which are comprised in laser light radiation coming back from said object illuminated with the object beam beating with the plurality of frequency components that change with time in a chirping manner and which are further comprised in the reference beam received at the sensor via said reference path not including the object said beat signal having a signal intensity allowing for the determination of the distance of the object in response to the intensity of the signal ;

wherein the frequency shifted feedback laser radiation source further comprises a means for injection of narrow banded, non-pumping, modulated seed laser light into the frequency shifted feedback resonator, said means for injection ~~comprising a means for modulation of the~~

~~narrow banded non-pumping seed laser light,~~ modulating the seed laser light such that said intensity of said beat signal is increased.

Claim 37 (currently amended): The laser radiation source according to claim 36, wherein ~~the means for modulating~~ the seed laser light is ~~a means for~~ phase ~~modulation of the seed laser light~~ modulated.

Claim 38 (previously presented): The laser radiation source according to claim 36, wherein the seed light has a wavelength close to the wavelength where the gain of the pumped gain medium is unity so that amplification of the seed laser light occurs at latest after a few resonator round trips.

Claim 39 (currently amended): The laser radiation source according to claim 36, wherein the ~~means for modulation is adapted to modulate~~ seed laser light is modulated around a signature frequency of

$$\delta\nu = \alpha \times c \times \delta_1,$$

wherein

α = chirp rate,

c = speed of light, and

δ_1 = distance to be determined.

Claim 40 (previously presented): The laser radiation source according to claim 39, wherein the modulation frequency is periodically varied around the signature frequency of $\delta\nu = \alpha \times c \times \delta_1$.

Claim 41 (currently amended): The laser radiation source according to claim 36, wherein the ~~means for modulation is adapted to vary the~~ seed laser light is modulated with a periodically varying modulation frequency ~~periodically with time~~.

Claim 42 (previously presented): The laser radiation source according to claim 36, wherein the means for injection of seed laser light is an injection laser adapted to increase the intensity of the beat signal of the frequency shifted laser emitted frequency components at the object sensor beyond the intensity which can be obtained with spontaneous emission in the resonator of the frequency shifted feedback laser only.

Claim 43 (previously presented): The laser radiation source according claim 36, wherein the injection laser is a single mode laser

Claim 44 (previously presented): The laser radiation source according claim 43, wherein the injection laser has a frequency width of less than 5 % of the gain of the frequency shifted feedback laser radiation gain medium.

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Claim 45 (previously presented): The laser radiation source according claim 42, wherein the injection laser injects the non-pumping injection laser light into the gain medium of the frequency shifted feedback laser.

Claim 46 (previously presented): The laser radiation source according claim 45, wherein the gain medium of the frequency shifted feedback laser is an optical fiber internal to the resonator and/or constituting the resonator.

Claim 47 (currently amended): A frequency shifted laser radiation source for distance measurements, comprising:

a frequency shifted feedback laser resonator having a pumped gain medium with a gain greater than unity therein so as to emit frequency shifted laser light changing with time in a chirping manner;

a means for splitting said emitted frequency shifted laser light changing with time in a chirping manner into an object beam for irradiating an object and a reference beam, the emitted laser radiation being usable for determinations of distances of objects when using an object

detection sensor which receives laser light radiation coming back from an object illuminated with the object beam light and being at a distance to be determined and which object detection sensor also receives said reference beam via a reference path not including the object in such a manner that the laser light radiation coming back from the object and the reference beam interfere with one another, said interference producing a beat signal having a given intensity the intensity of said beat signal being representative for the distance of the object so that said distance can be determined in response to the intensity of said beat signal;

wherein the frequency shifted feedback laser radiation source further comprises a means for injection of narrow banded, non-pumping, modulated seed laser light into the frequency shifted feedback resonator, said means for injection ~~comprising a means for modulation of the narrow banded non-pumping seed laser light,~~ modulates the seed laser light such that said intensity of said beat signal is increased.

Claim 48 (previously presented): The laser radiation source according to claim 47, wherein the seed light has a wavelength close to the wavelength where the gain of the pumped gain medium is unity so that amplification of the seed laser light occurs at latest after a few resonator round trips.

Claim 49 (currently amended): The laser radiation source according to claim 47, wherein the ~~means for modulation is adapted to modulate the seed laser~~ seed laser light is modulated around a signature frequency of

$$\delta\nu = \alpha \times c \times \delta_1,$$

wherein

α = chirp rate,

c = speed of light, and

δ_1 = distance to be determined.

Claim 50 (previously presented): The laser radiation source according to claim 49, wherein the modulation frequency is periodically varied around the signature frequency of $\delta\nu = \alpha \times c \times \delta_1$.

Claim 51 (currently amended): The laser radiation source according to claim 47, wherein the ~~means for modulation is adapted to vary the modulation frequency periodically linear with time~~ seed laser light is modulated with a periodically varying frequency.

Claim 52 (previously presented): The laser radiation source according claim 51, wherein the injection laser has a frequency width of less than 5% of the gain of the frequency shifted feedback laser radiation gain medium.

Claim 53 (previously presented): The laser radiation source according claim 52, wherein the injection laser is a single mode laser.

Claim 54 (previously presented): The laser radiation source according claim 47, wherein the gain medium of the frequency shifted feedback laser is an optical fiber internal to the resonator and/or constituting the resonator.

Claim 55 (previously presented): The laser radiation source according claim 49, wherein the injection laser has a frequency width of less than 5% of the gain of the frequency shifted feedback laser radiation gain medium.

Claim 56 (previously presented): The laser radiation source according claim 50, wherein the injection laser has a frequency width of less than 5% of the gain of the frequency shifted feedback laser radiation gain medium.

Claim 57 (previously presented): The laser radiation source according claim 53, wherein the gain medium of the frequency shifted feedback laser is an optical fiber internal to the resonator and/or constituting the resonator.

Claim 58 (currently amended): A frequency shifted laser radiation source for distance measurements, comprising:

a frequency shifted feedback laser resonator having a pumped gain medium therein with a gain greater than unity so as to emit laser light having a plurality of frequency components changing with time in a chirping manner;

a means for splitting said emitted laser light having said plurality of frequency components changing with time in a chirping manner into an object beam for irradiating an object and a reference beam;

the emitted laser radiation being usable for determinations of distances of objects when using an object detection sensor which receives laser light radiation coming back from an object illuminated with the object beam light and being at a distance to be determined and which object detection sensor also receives said reference beam via a reference path not including the object in such a manner that the laser light radiation coming back from the object and the reference beam interfere with one another, said interference producing a signal by the beating of the plurality of frequency components that change with time in a chirping manner and which are comprised in laser light radiation coming back from said object illuminated with the object beam beating with the plurality of frequency components that change with time in a chirping manner and which are further comprised in the reference beam received at the sensor via said reference path not including the object said beat signal having a signal intensity allowing for the determination of the distance of the object in response to the intensity of the signal ;

wherein the frequency shifted feedback laser radiation source further comprises a means for injection of narrow banded, non-pumping, modulated seed laser light into the frequency shifted feedback resonator, said means for injection ~~comprising a means for modulation of the narrow banded non-pumping seed laser light,~~ modulating the seed laser light such that said intensity of said beat signal is increased, wherein ~~the means for modulating~~ the seed laser light is ~~a means for~~ phase ~~modulation of the seed laser light~~ modulated; and

wherein the ~~means for modulation is adapted to modulate~~ means for injection is modulated such that said intensity of said beat signal is increased by modulating the seed laser light such that the seed laser light is modulated around a signature frequency of

$\delta v = \alpha \times c \times \delta_1$,

wherein

α = chirp rate,

c = speed of light, and

δ_1 = distance to be determined.

Claim 59 (previously presented): A frequency shifted laser radiation source for distance measurements, comprising:

a frequency shifted feedback laser resonator having a pumped gain medium with a gain greater than unity therein so as to emit frequency shifted laser light changing with time in a chirping manner;

a means for splitting said emitted frequency shifted laser light changing with time in a chirping manner into an object beam for irradiating an object and a reference beam, the emitted laser radiation being usable for determinations of distances of objects when using an object detection sensor which receives laser light radiation coming back from an object illuminated with the object beam light and being at a distance to be determined and which object detection sensor also receives said reference beam via a reference path not including the object in such a manner that the laser light radiation coming back from the object and the reference beam interfere with one another, said interference producing a beat signal having a given intensity the intensity of said beat signal being representative for the distance of the object so that said distance can be determined in response to the intensity of said beat signal;

wherein the frequency shifted feedback laser radiation source further comprises a means for injection of narrow banded, non-pumping, modulated seed laser light into the frequency shifted feedback resonator, said means for injection ~~comprising a means for modulation of the narrow banded non-pumping seed laser light,~~ modulating the seed laser light such that said intensity of said beat signal is increased;

wherein the ~~means for modulation is adapted to modulate the seed laser~~ seed laser light is modulated around a signature frequency of

$\delta v = \alpha \times c \times \delta_1$,

wherein

α = chirp rate,

c = speed of light, and

δ_1 = distance to be determined; and

wherein the ~~means for modulation~~ seed laser light is adapted to vary the modulation frequency periodically linear with time.